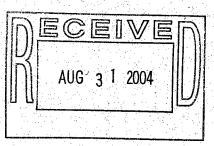
Comments of

Grassland Water District And Grassland Resource Conservation District

on the

Draft
Program Environmental Impact Report /
Environmental Impact Statement
For
The California High Speed Train Project



Volume 2 of 2

EXHIBIT 9

Thomas Reid Associates, Grassland Water District Land Planning Guidance Study (January 23, 1995)

GRASSLAND WATER DISTRICT LAND PLANNING GUIDANCE STUDY

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GRASSLAND WATER DISTRICT LAND PLANNING GUIDANCE STUDY

Introduction

The wetland ecosystems of the Grasslands Management Area, known as the most valuable of the remaining wetlands in the Central Valley portion of the Pacific Flyway, are endangered by development and other human activities on surrounding and adjacent lands (Frederickson and Laubhan 1994). Like many semi-natural areas embedded in human-dominated landscapes, the Grasslands Management Area is threatened more by cumulative impacts that cross its boundaries and fragment its continuity than by outright destruction (Map 1, page 21).

The Planning Guidance Study identifies:

- (1) Immediate, critical threats to wildlife habitat and steps needed to protect the habitat, and
- (2) Long-term threats to habitat and programmatic mitigation that should be used to address these threats.

I. IMMEDIATE CRITICAL THREATS

The most immediate, critical threat to the integrity of the habitat is the urban expansion of the City of Los Banos to the east, which would effectively isolate the southern portion of the wildlife refuge from the northern portion (Map 2, page 22). An important first principle of conservation planning is to prevent the fragmentation of habitat. A second important principle is to maintain links between habitat patches for connectivity facilitating species dispersal and migration. The major area of connectivity between the north and south wetland habitats is also the area in which a number of pending and/or approved projects are being considered. Sound conservation planning would require that this area be maintained as a permanent wildlife corridor between two major habitat areas and that development plans be discontinued.

A. Biological Issues

The proposed Los Banos General Plan will have potentially adverse impacts on sensitive wildlife, including listed threatened species. Specifically:

- the proposed expansion of urban land uses at the eastern end of the city between the San Luis Canal and the Santa Fe Canal may affect waterfowl and shorebird utilization of both the north and south Grasslands by interfering with bird population movements in the corridor area between the two refuge areas. Any development to the east of the Santa Fe Canal will likely have an adverse effect on bird movements.
- o road development along the San Luis, Santa Fe or other canals could result in take of a federally listed threatened species, the giant garter snake

there are recent sightings of the San Joaquin kit fox, a federally listed endangered species, along Highway 152, reported by the California Department of Fish and Game.

Waterfowl and Shorebird Movements

Several studies, as summarized below, have recently documented the importance of this corridor to bird movements.

1) Fleskes data on pintail movements (Map 3, page 23):

A 3-year study (1991-94) of survival, habitat use, and movements of female northern pintail ducks wintering in the San Joaquin Valley was conducted by Joe Fleskes with the National Biological Service, California Pacific Science Center, Dixon, California. Each year, 120 to 180 female pintails were captured, radio-marked and released during August and September. Day and night locations of these ducks were determined by triangulation from truck-mounted directional antennae.

During the pre-hunting season, pintail distribution generally reflected and shifted according to the amount of available flooded habitat. For instance in 1991, early pintails were primarily concentrated on private wetlands in the South Grasslands and Volta Wildlife Area but moved to North Grassland clubs in early October as they became flooded. Day and nighttime locations during this period were often in the same or adjacent wetland.

During the hunting period, the pattern changed. Most pintails were located on National Wildlife Refuge and State Wildlife Area sanctuaries on hunting days (Wednesdays, Saturdays, Sundays) and flew to private wetlands in the evening. On non-hunting days, some pintails remained on private wetlands and some returned in the morning to sanctuaries. Most pintails present at Merced NWR during the day either remained there at night or flew to South Grassland duck clubs. In contrast, almost all pintails present at San Luis NWR and Los Banos WA flew to duck clubs in the evening. Most flew to North Grassland duck clubs, but flights to South Grassland clubs peaked during late November. There were three major morning and evening flight routes:

- 1) East-west between San Luis NWR/Los Banos WA and North Grassland duck clubs:
- 2) North-south movements between San Luis NWR/Los Banos WA/Merced NWR and South Grassland duck clubs;
 - 3) Dispersal from Kesterson NWR to surrounding North Grassland duck clubs.

These data indicate the extreme importance of the corridor connection between the north and south grassland duck clubs in the daily movement of waterfowl through the GWMA. While many other species of ducks, geese, swans, raptorial, upland, shore and wading birds are found in the habitats of the GWMA, pintails are one of the dominant species among the waterfowl component.

There is no quantitative information as to the effect the imposition of urban use would have on current flight patterns, or what proportion of the ducks would selectively fly over wetland, agriculture or other open ground which could provide a landing place. Given the

With respect to the GWMA, there are two scales on which a buffer needs to be considered: (1) a buffer on the east side of the City of Los Banos which will protect the resources in the corridor between the North and South Grasslands and (2) the buffer around the entire Grasslands Wildlife Management Area which will effectively insulate the GWMA in the long-term from future encroachment of urbanization or other non-wildlife-compatible uses. This latter buffer concept is further discussed below under Means to Address Long Term Threats.

1. What is a "Buffer"? The applicable dictionary definition of buffer is simply "something that serves as a protective barrier." When this definition is applied to land use planning and conservation biology, the concept must be expanded to encompass a range of conditions and meanings. The purpose of a buffer is to protect a species and/or community of concern within a protected area from adverse effects that are caused by non-compatible land uses adjacent to or near the reserve.

To adequately protect a species or community of concern from adverse effects one needs to consider the behavior of the species of concern with respect to the outside environment, and separately, the effect of the outside environment on the species of concern within the reserved area. The combination of these two distinct sets of effects independently contribute to what constitutes an effective buffer.

For example, with respect to the giant garter snake (GGS), the life habits of the garter snake determine the need for a buffer in the following manner. The GGS is one of the federally listed endangered species which occurs in the study area, the species is dependent on water channels (e.g. canals) for short-term escape from predators and for dispersal. The species will crawl up a grassy bank next to a canal to bask as part of its thermoregulation. Giant garter snakes have been observed numerous times to crawl as far as 200 feet laterally from a canal, but rarely, if ever more than 300 feet (G. Hansen, pers. comm.). If there is a road within the 200 feet, this will preferentially attract the garter snakes as a basking site, and if the road is more than very lightly travelled, then the probability of the snakes being killed by vehicular traffic is high. Therefore, from the point of view of snake behavior, to be effective a buffer must not contain a public road within 200 to 300 feet of the nearest garter snake habitat (e.g. the canal).

From the point of view of incursions into the habitat from the outside, if there is urbanization close to habitat, or access to habitat areas, then the snake can be adversely impacted by human disturbance, domestic pets (especially cats) and water pollution in runoff. The GGS is particularly sensitive to the effects of oil and grease which destroy the insulating properties of its skin and scales. Human disturbance includes collecting and killing the animals, trampling vegetation, littering and dumping, and killing the prey base (e.g with chemicals).

For these impacts, the type of barrier between land uses may be more important than the mere width of the buffer per se. For example, a residential subdivision can be separated from a wetland or canal by intervening agricultural land of different widths. If there were 200 feet of beet or alfalfa fields separating the subdivision from the nearest habitat, this might distract or discourage humans crossing to the habitat, since they would be trespassing over a farmer's field, which could be posted. If the width of the field were doubled, it would act as a greater deterrent to humans since there would be a greater distance of

agricultural land to cross, and the habitat would be more distant in the view, and therefore less "attractive."

On the other hand, neither 200 nor 400 feet of agricultural land would act as much of a deterrent to cats, except that with a greater distance to cross, a cat could become distracted or decide to turn back before it encountered the habitat. However, once a cat had learned that a hunting ground existed, they would likely deliberately seek the area out irrespective of the relative distance, since house cats, both domestic and feral, have been recorded to travel many miles.

In both cases, a relatively impenetrable barrier between the habitat (canal) and the subdivision, even if only a few feet wide, could be more effective in preventing incursion of impact sources than would several hundred feet of agricultural land. For example, a strip of chicken wire between the ground and one foot off the ground, with blackberry bramble (Rubus ursinus) growing on top of it, could be extremely effective in preventing both humans and cats from reaching the canal, even if the blackberry bushes were only ten or twenty feet thick.

Regardless of the separation between a subdivision and habitat, water pollution in runoff from the subdivision could be prevented from reaching the habitat, if all of the runoff flowed to a drainage system which trapped and removed the oil and grease before any of the water could flow offsite.

C. Recommended Actions to Avoid Fragmentation and Impacts to "Corridor" Area

1. Overall Recommendation

The overall recommendation with respect to buffers is to use a combination of buffering techniques on different scales:

- Restriction of land uses incompatible with habitat to an area geographically west of the Santa Fe Grade, as discussed below
- A minimum 200-foot wide buffer strip of agricultural land separating any waterways from the nearest public road or urbanization
- An impenetrable barrier over several tens of feet close to habitat

2. Specific Land Use Changes Recommended for Los Banos General Plan

a. Legal Requirement for an HCP

The proposed Los Banos General Plan, or projects contemplated thereunder, are subject to federal and state permits under the respective Endangered Species Acts, and require Habitat Conservation Plans. Pursuant to the federal and state Endangered Species Acts, actions which could result in a take of listed species are subject to permits. Federal actions such as highway or water delivery system improvements involving federal funding come under Section 7 of the federal ESA, and require a consultation between the involved federal agency and the USFWS. In order for the action to proceed, the USFWS must issue a Non-Jeopardy Biological Opinion stating that the project will avoid take of the listed species

or that adequate mitigation has been incorporated into the project so that the project will not adversely affect the survival or recovery of the species in the wild.

For local agency and private actions, activities in listed species habitat are subject to Sections 9 and 10 of the ESA. Take of the species is prohibited under Section 9 unless a permit is granted under Section 10(a). The permit is granted only if the proposed action incorporates a Habitat Conservation Plan (HCP) which fully mitigates the expected impacts of the project. The relevant permit on the state level is the 2081 permit.

Actions under the proposed Los Banos General Plan which could result in a take of listed species include the proposed 152 bypass and its interchanges, residential, commercial and industrial development adjacent to 152 in the eastern portion of the city, and the residential and industrial development areas designated to the east and immediately west of the San Luis Canal. Development of the college site south of the proposed bypass would be growth-inducing to the immediate area, and would thus result in both direct and indirect loss of habitat and increase in local traffic. Overall growth, and the development particularly in the eastern portion of the city would cause increased traffic levels on the existing Pacheco Boulevard, on the extension of Pioneer Road to the east, along the proposed 152 bypass, and the proposed road along the Santa Fe Canal would introduce or increase vehicular traffic along each of these transportation corridors. This traffic would in turn result in road kill mortality to both San Joaquin kit fox and giant garter snake. As mentioned above, other sources of impact include direct habitat loss, hunting, collection, predation by domestic animals, and water pollution in runoff.

The City of Los Banos may either have to prepare a citywide HCP which addresses and mitigates all potential impacts to listed species, or the General Plan must include the condition that any project within the known or suspected habitat of a listed species must obtain a 10(a) permit subject to an HCP prior to approval.

The preparation of an HCP, and USFWS processing of an 10(a) permit application are difficult, expensive and time-consuming processes which will significantly delay the implementation of projects under the new General Plan.

b. Avoidance of an HCP

In order for the City of Los Banos to avoid the need for endangered species take permits, we are proposing an alternative to the General Plan which is designed to avoid a priori, the majority of impacts to listed species in the area east of the city. In addition, these proposed changes would offer a major land use transitional area that would permanently buffer the threatened or endangered species, waterfowl and shorebirds in the wetlands east of the Santa Fe grade from the effects of future urban growth in Los Banos. The changes we are proposing are described below and shown on the attached map (Figure 1).

The alternative General Plan configuration we show would constitute an environmentally superior alternative under CEQA. We suggest that either the General Plan be revised to incorporate these changes as part of the Proposed Project, or that this alternative be studied in detail in the Draft EIR as part of the environmentally superior alternative.

On the other hand, we have done an independent analysis of the amount of growth that could be accommodated on vacant lands within the existing City Limit of Los Banos, based on the demographic data from Urban Research Associates, compiled for the City of Los Banos, and the existing General Plan, as shown on the attached pages copied from referenced documents. This analysis, shown in our Table 1, illustrates that about 6,600 residential units and over 8 million square feet each of commercial and industrial development could be built on vacant land within the existing city limit, without any expansion of the city into neighboring areas.

The demographic data in the attached Table 1 "Housing Trends in Los Banos and Neighboring Cities", from Urban Research Associates, showed that between April 1980 and January 1992 the number of housing units increased from 3,944 to 5,657, an annualized increase of 1,749 units in 12 years, or 146 units per year. At this rate, the remaining vacant land within the existing city limit could accommodate growth in Los Banos over the next 45 years, or well beyond both the 20 year stated planning horizon for the General Plan, and the 2020 planning horizon used for the projections in the NOP.

The rate of growth of Los Banos will be tied to the overall condition of the California economy. Indications are that the growth rate over the 1980 to 1992 period encompasses both faster and slower economic times and would be more indicative of a long-range trend than the calculated value used in the NOP. It therefore appears that the major expansion of land area as contemplated in the new General Plan may not be needed for the foreseeable future, and certainly not within the time frame the new General Plan is supposed to address.

A compact growth alternative would stipulate that infill on vacant lands within the existing City Limits, already designated for each type of use take place before there is outward expansion of the city urbanized area. The compact growth alternative would have other advantages as well. The provision of infrastructure to outlying areas is inefficient and extremely expensive. The compact growth alternative, which would eliminate the need to extend water, sewer, fire, police services and schools to outlying areas, would be far less expensive than the proposed General Plan.

d. Mitigation for stormwater discharges

Stormwater discharges can adversely affect the San Luis Canal and wildlife habitat. The City of Los Banos has a contract with the GWD to discharge urban stormwater to the San Luis Canal, which is used to supply Central Valley project water to the wetland habitat north of Hwy 152. Stormwater from the entire east side of the city is currently discharged to the San Luis Canal. The city is required to monitor both the quality and quantity of runoff in the San Luis Canal. It has been shown that during peak runoff periods the runoff can exceed the contractual limits. In addition, while the city is small and there are few industrial sources, pollutant loading is low and there is high enough dilution. However, with the contemplated growth in urban uses, pollution of the San Luis Canal by oil and grease, heavy metals, and toxics could become a problem.

Urban pollution, as mentioned, can adversely affect giant garter snake using this canal, as well as wildlife for which the canal is used to supply water. Therefore, the Master Storm Drain Plan, as part of the General Plan, should include mitigation for the impacts of

pollution giant garter snake and on birds. Mitigation includes pre-treatment, heavy metals catch basins, filters for oil and grease removal, and best management practices.

e. Mitigation for Wastewater Treatment Ponds

The present and future wastewater disposal system for the City of Los Banos can have adverse impacts on wildlife. The present City of Los Banos, with a population of just over 16,000 persons and little industrial development currently utilizes a wastewater treatment plant that provides only primary treatment (grit removal and solids settling), followed by aeration in large oxidation ponds. The ponds are located in the northeast portion of the city, to the east of the Santa Fe Canal (Santa Fe Grade). Because of the preponderance of residential flow in the overall wastewater stream, there has not been a problem with toxics or heavy metals. However, the few industrial sources entering the wastewater are not required to pretreat their wastewater, and have contributed a high biochemical oxygen demand (BOD) to the waste stream (M. Teague, pers. comm.)

Large numbers of waterfowl and shorebirds have been observed on the ponds, which they use for resting and feeding. At present there is a concern on the part of the GWD and other resource agencies that the high concentrations of birds using these ponds is increasing the incidence of avian cholera. According to the USFWS field office in Los Banos, bird use of the Los Banos sewer ponds has been correlated with outbreaks of avian cholera among the local waterfowl populations. Mortality of Aleutian Canada Goose, a listed endangered species due to avian cholera, has been linked to the use of sewer ponds by this species in the northern San Joaquin Valley.

The agents in the wastewater responsible for avian cholera transmission are not completely understood, but one hypothesis being studied is that the calcium/magnesium ratio in the wastewater is favorable to the growth of avian cholera bacteria. The high densities of birds congregating on the ponds then leads to increased transmission of the disease within the bird populations.

Based on the analysis presented in the NOP for the EIR on the city's General Plan, the population of Los Banos is projected to grow from its present 16,000+ to between 40,000 and 60,000 by the year 2020. In addition, areas of the city are designated for commercial, commercial manufacturing, light industrial and industrial uses. The growth in population will increase the wastewater volume and the area needed for treatment, if the present method of sewage treatment were to continue. In addition, future commercial and industrial uses can introduce toxic components into the wastewater, such as heavy metals and chlorinated organic chemicals.

An increase in pond area would increase the surface area available to waterfowl and shorebirds, and could further increase the numbers of birds using these ponds as a resource, thereby further increasing disease risk within these populations. More significantly, the introduction of toxic components into the wastewater can pose new, more serious risks to the avian populations. Heavy metals are not removed by ordinary sewage treatment processes. Metals such as chromium, nickel and selenium are toxic to wildlife and may pose a significant health threat to the larger number of birds using the ponds.

If adverse impacts to waterfowl and other birds can be traced to the existing wastewater treatment ponds, mitigation could require the City changing to a more advanced

waste treatment process that eliminated such ponds. Alternatively, if the City were to provide high-level (e.g. tertiary) treatment, then instead of oxidation ponds, the clean water could be put into percolation ponds which would both provide pond habitat for wildlife and recharge of the groundwater.

When the city's population reaches a certain size, it is likely that the Regional Water Quality Control Board will require a higher degree of wastewater treatment (ie. secondary or tertiary treatment). Possible funding sources for a new wastewater plant include local sewer connection fees imposed upon new development and loan funding from the California State Revolving Fund for Construction of Wastewater Treatment Facilities administered by the State Water Resources Control Board.

TABLE 1
CITY OF LOS BANOS
DEVELOPMENT POTENTIAL ON VACANT LANDS

CATEGORY	VACANT ACRES			
RESIDENTIAL		TYPICAL DENSITY (DU/ACRE)	DWELLING UNITS POSSIBLE	SQUARE FEET POSSIBLE
PD	142.4	10*	1,420	
Low-Density 1-7 DU/ac	830.14	5	4,151	
Medium Density 8-17 DU/ac	31.32	10	313	
High Density 18-22 DU/acre	47.9	15	718	
TOTAL RESIDENTIAL	1,051.8		6,603	
COMMERCIAL	. :	TYPICAL FLOOR AREA RATIO		
Neighborhood Commercial	12.7	.37		204,700
Retail	4.24	1.25		230,870
General	48.33	.42		894,733
Highway Commercial	368.3	.42		6,738,122
TOTAL COMMERCIAL	433.57			8,068,425
INDUSTRIAL				
Planned	255.4	.40		4,450,090
General	191.8	.50		4,177,400
TOTAL INDUSTRIAL	447.20			8,627,490

SOURCES: Urban Research Associates. December 1992. "Demography and Economic Development in Los Banos, California. The State of the City." City of Los Banos General Plan.

expansion more than double the size of its urban area when there is enough vacant land within its existing core area to serve reasonably anticipated growth over the next 30 years.

Table 2 Expenditures for Hunting, Fishing, and Nonconsumptive Wildlife-Associated Recreation in California, 1991

Activities by Participants 16 Years Old and Older in California

Fishing	
Anglers	2,677,000
Days of Fishing	23,994,000
Average days per angler	9
Trip-related expenditures	\$829,902,000
Food and lodging	\$378,452,000
Transportation	\$157,839,000
Other	\$293,611,000
Hunting	
Hunters	446,000
Days of Hunting	5,211,000
Average days per hunter	12
Trip-related expenditures	\$107,884,000
Food and lodging	\$55,403,000
Transportation	\$39,473,000
Other	\$13,008,000
Primary Nonconsumptive	
Primary nonresidential participants	3,845,000
Days of participation	42,353,000
Average days per participant	11
Trip-related expenditurs	\$929,358,000

Source: USDI, Fish and Wildlife Service. 1991. <u>National Survey of Fishing, Hunting, and Wildlife-Associated Recreation. California</u>.

The City of Los Banos claims to need this expansion area for its economic well being and to be responsive to private developer demands for growth.

The Grassland Water District has an equally strong basis for its own land use imperative -- the protection of the wildlife resources within its boundaries and its own role in the economic vitality of the region.

D. Further Research Needs

Detailed studies of species of concern in the Grasslands Management Area are also needed to establish with greater certainty the auxiliary habitat width and levels of connectivity required, and the specific types of land use in these zones that are compatible with native wildlife. Critical information includes data on home range size, movements, and habitat preferences. Additional research should be directed toward refining the concepts of resource beneficial, neutral and negative land uses as they relate to the resources of concern.

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Urban Research Associates. December 1992. <u>Demography and Economic Development in Los Banos. California</u>. <u>The State of the City</u>. Report prepared for the City of Los Banos.

Maps

The maps on the following pages are based on information from the following sources:

Satellite imagery (processed to enhance wetland habitat), Ducks Unlimited.

Base maps of roads and city spheres of influence, Merced Data Special Services.

General plan maps and updates and land use categories, Valley Planning Associates.

Natural Diversity Database of rare, threatened and endangered species, Natural Heritage Division, Department of Fish and Game.

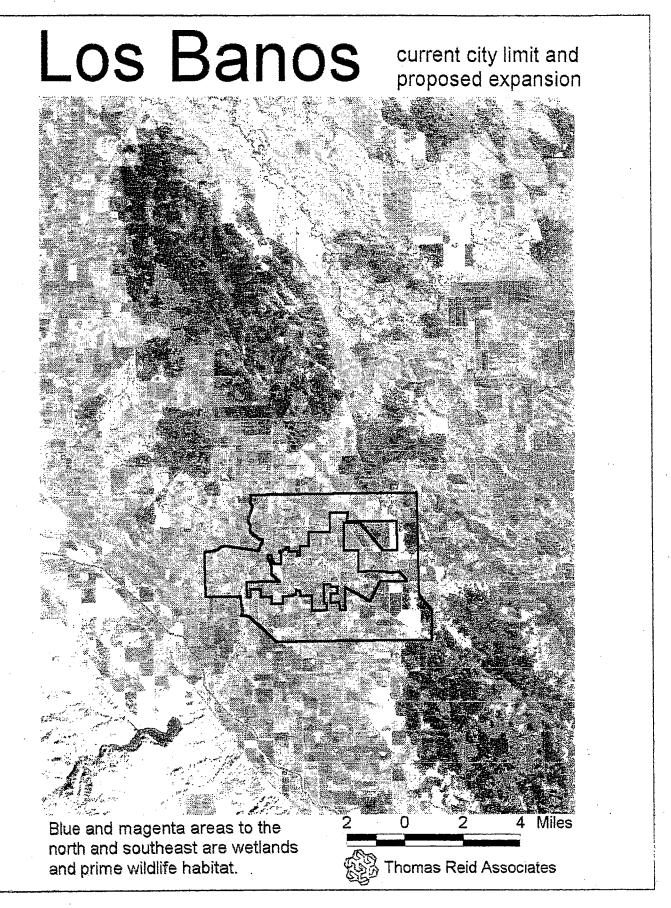
Boudaries for public lands and surface water features, Bureau of Reclamation.

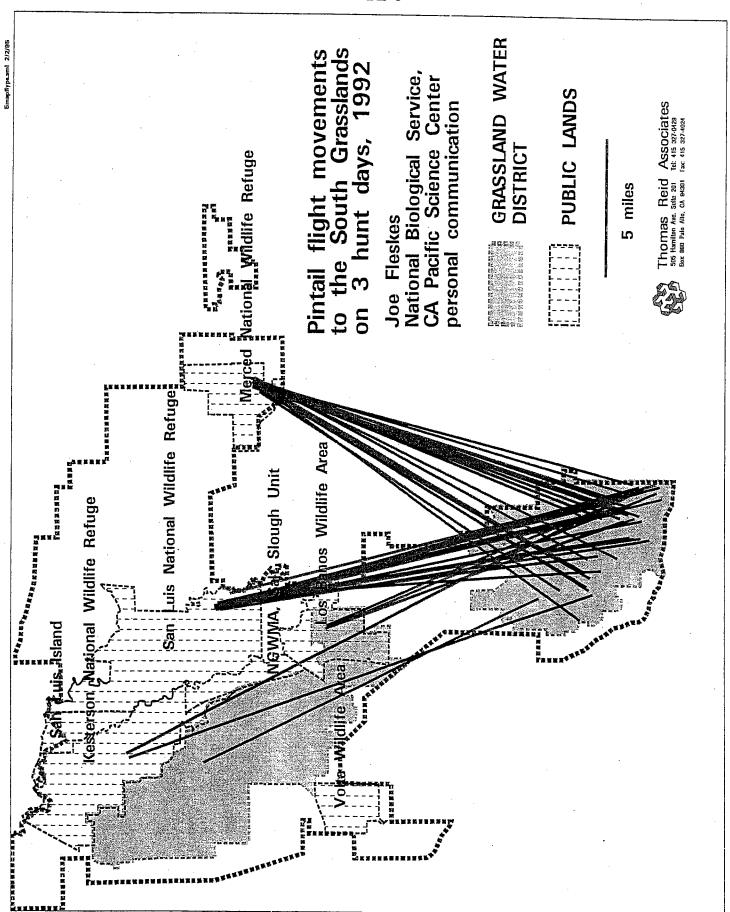
Grassland Water District boundaries, Grassland Water District.

Grassland Wildlife Management Area boundary, U.S. Department of Fish and Wildlife.

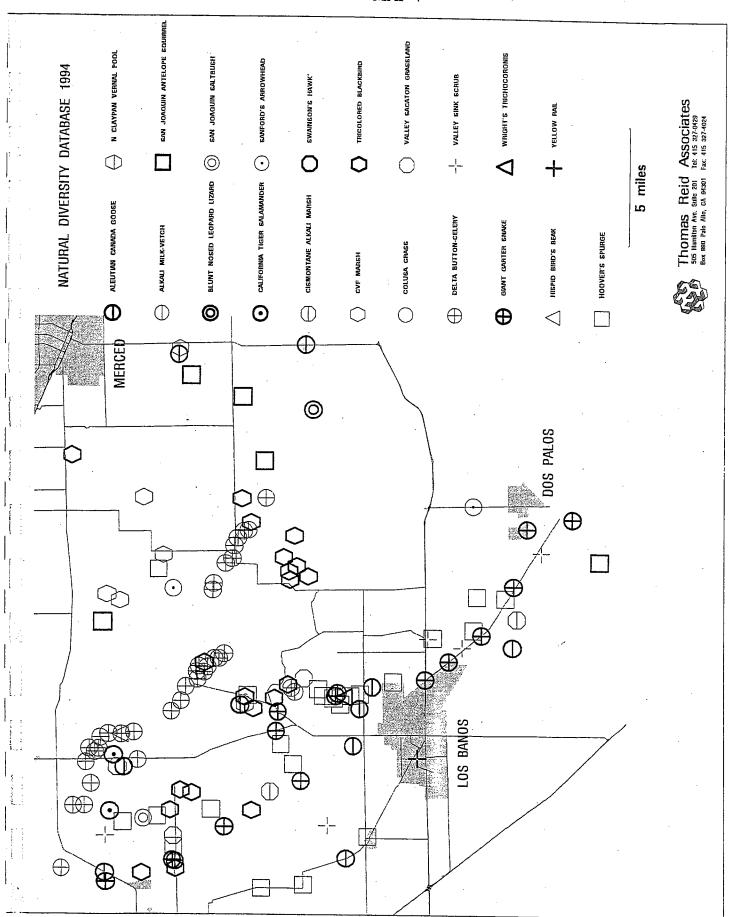
MAP 1

LandSat View of the **GRASSLAND WILDLIFE MANAGEMENT AREA** Miles 30 Thomas Reid Associates



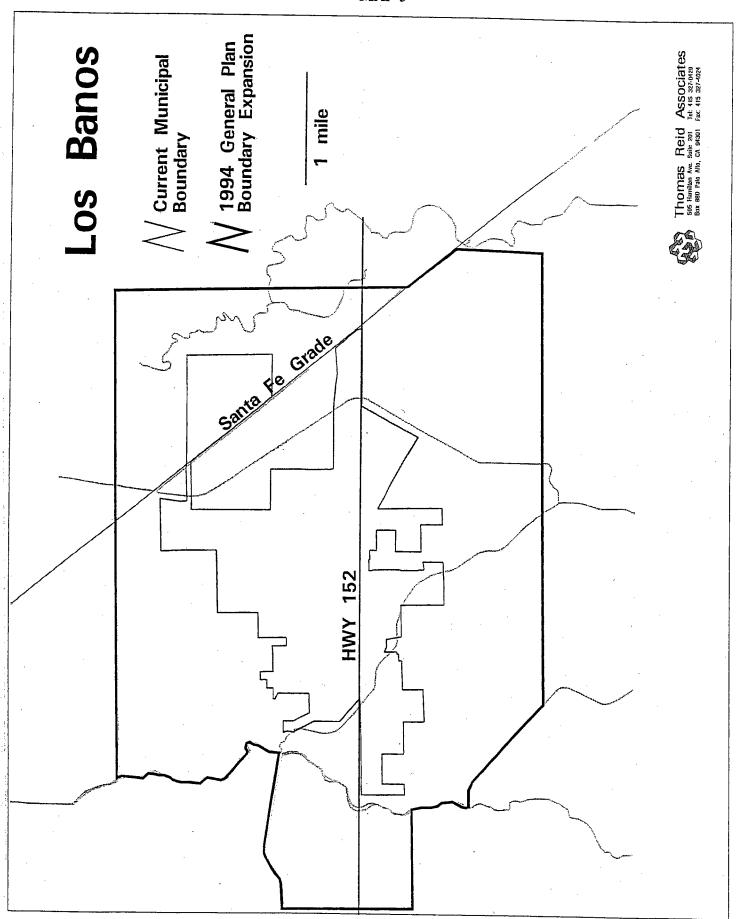


MAP 4



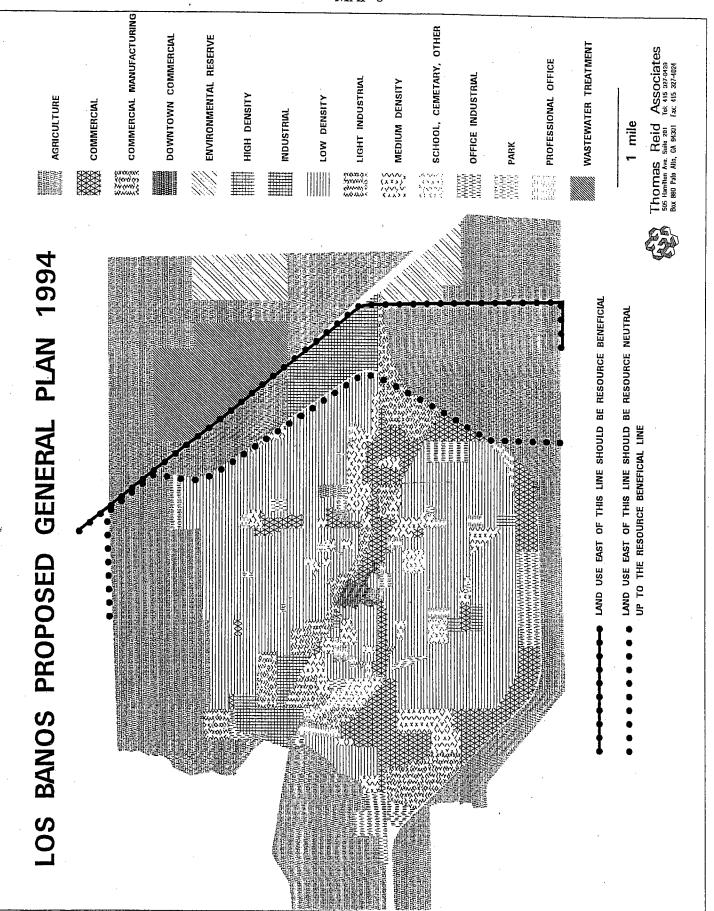
January 30, 1995 - Thomas Reid Associates

MAP 5

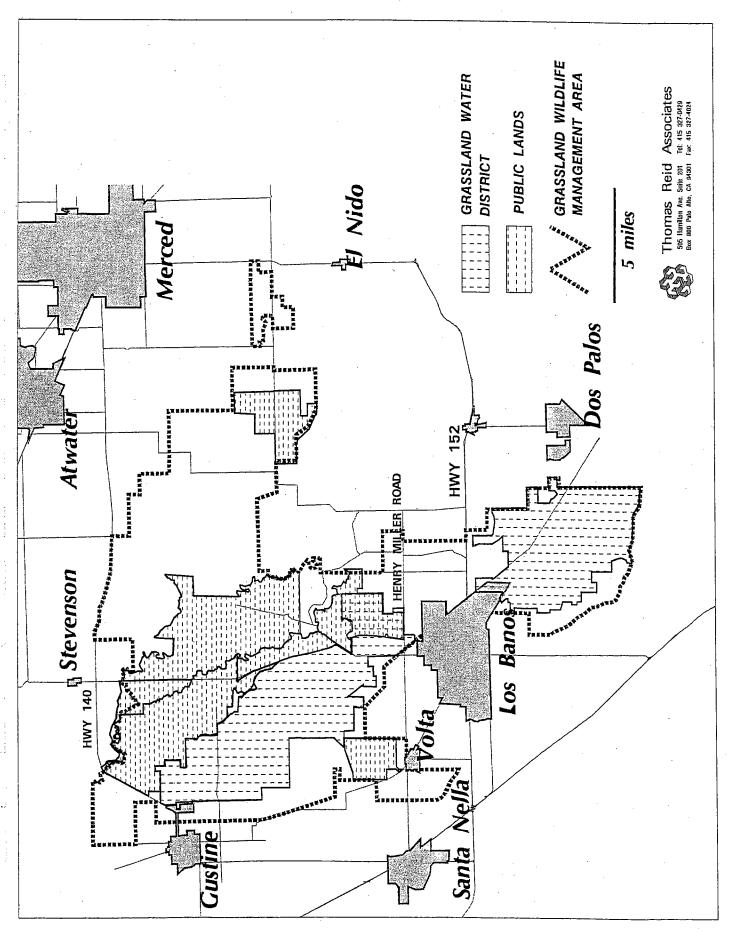


January 30, 1995 - Thomas Reid Associates

MAP 6



MAP 7



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